

IN THE SPECIFICATION:

Please amend page 3, lines 19 and 21 extending to page 4, line 1, page 15, lines 12-13, and page 16, line 7, so that all references to ~~Me(OH)~~—or to ~~MeOH~~—are deleted and the term “alkali metal hydroxide” substituted therefor as indicated on the attached marked-up pages of the specification.

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U.S. Patent No. 4,590,260 to Harada et al. teaches that copoly (amino acids) are produced by heating a mixture of at least one amino acid with at least one of ammonium malate, ammonium maleate or ammonium fumarate, or ammonium salts of malic, maleic or
5 fumaric acid monoamide, or malic, maleic or fumaric acid monoamide or diamide, and hydrolyzing the reaction mixture under neutral or alkaline condition. The method is said to be simple and easy to handle, and therefore, suitable for industrial applications.

U.S. Patent No. 5,362,412 to Hartman, et al., teaches use of iminodisuccinic as a
10 nonphosphorus-containing biodegradable stabilizer, and U.S. Patent No. 5,468,838 to Boehmke; teaches a process for the preparation of polysuccinimide, polyaspartic acid and their salts, where, polysuccinimide, polyaspartic acid and their salts are prepared by reaction of maleic anhydride and ammonia, polycondensation of the resulting product in the presence of a solubilizing agent and, if appropriate, hydrolysis.

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Patent Application Publication WO9845251A1 of GROTH, et al., entitled "Preparation and Use of Iminodisuccinic Acid Salts," teaches that iminodisuccinic acid alkaline salts can be prepared by reacting maleic acid anhydride (MAA), alkali metal hydroxide (MeOH), NH₃ and water in a molar ratio of MAA : ~~MeOH~~ alkali metal hydroxide : NH₃ :
20 H₂O = 2 : 0.1 - 4 : 1.1 - 6.5 : 5 - 30 at 70 - 170 °C and 1 - 80 bar for 0.1 - 100 hours. The reaction mixture is mixed with additional H₂O and optionally ~~MeOH~~ alkali metal

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hydroxide and is freed distillatively of NH_3 at 50-170 °C and 0.1-50 bar and then set at a solids content of 5 - 60 weight % using H_2O . The iminodisuccinic acid alkaline salts are said to be useful for increasing the brightness and brilliance of plant fibres in paper manufacture.

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Patent Application Publication No. JP8012631, of Yamamoto Hiroshi also teaches a procedure for production of iminodisuccinic acid and it's alkali metal salt and a biodegradable chelating agent containing the same. In this procedure, a tetraalkali metal salt of iminodisuccinic acid is obtained by adding a half ester of maleic acid to aspartic acid or ammonia under an alkaline condition followed by hydrolysis and evaporation to dryness. A second objective iminosuccinic acid is obtained by the above addition reaction followed by **hydrolysis** and then addition of sulfuric acid (without conducting an evaporation to dryness). In these processes, use of L-aspartic acid in place of the ordinary aspartic acid is said to produce D,D-form-free iminodisuccinic acid and a tetraalkali metal salt thereof. Alternatively, L,L- iminodisuccinic acid is said to be selectively obtained by prior crystallization and/or washing of a mixture of the L,L-form and D,D- form of iminodisuccinic acid or a tetraalkali metal salt thereof. The other "objective biodegradable chelating agent" is said to contain, as the active ingredient, the D,D- form-free iminodisuccinic acid and/or an alkali metal salt thereof.

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U.S. Patent No. 4,839,461 to Boehmke describes a procedure for preparation of

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The preferred process or method of the present invention may be described as follows:

Acid anhydride (or lactone) + polyfunctional amine -> N- polyfunctional acid common
name amide

5 Then,

N- polyfunctional acid common name amide+polyfunctional amine ->
imido di N- polyfunctional acid common name amide

Or,

Acid anhydride (or lactone) + polyfunctional amine -> N-acid common name
10 polyfunctional amide

Then,

N-acid common name polyfunctional amide + acid anhydride + Me(OH) alkali metal
hydroxide + R-NH₂ -> amino acid Me salt N-common name polyfunctional amide

Where R is a hydrogen or organic radical and Me is an alkali metal

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Either method of synthesis of this invention has the ability to produce a chelating
compound with at least six coordinating nonbonded electrons; and at least five of the
nonbonded electron pairs may participate in coordination without steric hindrance or bond
angle limitations.

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For instance or example:

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Maleic anhydride + ethanol amine -> N-ethanolmaleicamide

Then, in the same vessel in an aqueous phase,

2 N- ethanolmaleicamide + NH₃ -> isomers of N,N -amino diethanolsuccinamide

5 In the first step, the primary or secondary amide reaction will occur to yield essentially 100% of the desired product. Then the heat from the amide reaction fuels the radical reaction, in the same vessel at the same time. ~~Me(OH)~~ alkali metal hydroxide, NH₃, or polyfunctional amine and water further react producing poly functional amine substituted amino disuccinic acid or salt. All processes occur without the heating commonly needed in
10 prior art methods for condensing, and occur with fewer raw materials and less equipment than prior art methods, thereby offering an economic advantage over those methods.

I have discovered that all isomers with the added Lewis base functionality (or with Lewis base functional groups) from either the acid amide or the additional groups attached to the
15 imido group, have the ability to donate at least five nonbonded pairs without hindrance or bond strain; unlike the non-substituted Iminodisuccinates' isomers, the compounds of the present invention may find broad commercial use.

Another unique feature of the compounds of the present invention is that they are water
20 borne and hydrolysis of a polymer will not be necessary. Therefore, with one reaction vessel, at ambient pressure, without the need for heating, the N, N -amino disuccinic